4.5 HAZARDS AND HAZARDOUS MATERIALS

This section describes the environmental setting and impacts related to hazards and hazardous materials. For the purposes of this analysis, the term "hazards" refers to risk associated with fires, explosions, exposure to hazardous materials, interference with emergency response plans, etc.

The term "hazardous material" is defined in different ways for different regulatory programs. For the purposes of this analysis, the definition of "hazardous material" is that defined by the California Health and Safety Code, Section 25501: "because of their quantity, concentration, or physical or chemical characteristics, (they) pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment."

"Hazardous waste" is a subset of hazardous materials. For the purposes of this analysis, the definition of hazardous waste is that defined by the California Health and Safety Code, Section 25517, and in the California Code of Regulations, Title 22, Section 66261.2: "because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed."

4.5.1 Environmental Setting

Pipeline Risk of Upset

Unintentional releases of natural gas from the existing pipeline or the above ground facilities could pose risks to human health and safety. For example, natural gas could be released from a leak or rupture in one of the pipe segments. If the natural gas reaches a combustible mixture and an ignition source is present, a fire and/or explosion could occur, resulting in possible injuries and/or deaths.

Natural gas is comprised primarily of methane. It is colorless, odorless, and tasteless. Methane is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an ignition temperature of 1,000 degrees Fahrenheit (°F) and is flammable at concentrations between five percent and 15 percent in air. Unconfined mixtures of

methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

Project Area Geography

The proposed pipeline would be constructed in mostly undeveloped agricultural and preserved habitat areas. The proposed route generally follows existing rights-of-way along Franklin Boulevard and the Union Pacific Railroad (UPRR). Much of the existing terrain on either side of the proposed pipeline route has been modified to allow for agriculture practices and is generally level, with man-made agricultural ditches and channels. Vegetation along the route is primarily agricultural crops or annual grasses with riparian vegetation along drainage ditches and the Mokelumne and Cosumnes rivers.

Pre-Existing Contaminated Soils or Groundwater

Use or storage of large quantifies of hazardous materials along the proposed pipeline route is not evident. However, past agricultural and other uses along the proposed route could have resulted in the use and storage of hazardous materials and wastes. Lead-based paint has been found on the bridge crossing the Cosumnes River that would be removed as part of the proposed Project. The proposed Franklin Boulevard construction yard is a fallow field where hazardous materials storage has not been known to occur in the past or present.

Transportation of Hazardous Materials Within / Adjacent to Project Area

In general, hazardous materials are routinely transported by truck or rail. With few exceptions, section 31303 of the California Vehicle Code and U.S. Department of Transportation (DOT) regulations prohibit the through-transportation of hazardous materials in residential neighborhoods and require that hazardous materials be transported via routes with the least overall travel time.

The UPRR is a major transportation route directly adjacent to the proposed pipeline route that is used for the routine transport of goods, including hazardous materials. Interstate 5 (I-5) is a major truck route approximately one mile west of the proposed pipeline route. The main access routes to the proposed construction yard and the proposed pipeline route are from I-5 to Franklin Boulevard via Elk Grove Boulevard, Hood Franklin Road, Twin Cities Road, or Thornton Road. With the exception of high-

level radioactive materials and certain poisons and explosives, all classes of hazardous materials can be transported on major roadways within and adjacent to the proposed pipeline route. Because section 31303 of the California Vehicle Code and DOT regulations require that hazardous materials be transported via routes with the least overall travel time, local roads near the Project site would be used for deliveries and pickup of hazardous materials.

Pursuant to Government Code section 65962.5, a database search was conducted to identify known areas containing hazardous materials within the Project area. The following databases were reviewed for information on potential hazardous releases in the proposed Project area:

- California Department of Toxic Substances Control's (DTSC) Hazardous Waste and Substances Site List (Cortese List; DTSC 2007)
- California State Water Resources Control Board SWIM Compliance – Enforcement Action Order Documents (SWRCB 2007a);
- Central Valley Regional Water Quality Control Board, Leaking Underground Storage Tanks – Quarterly Report, April 2007 (CVRWQCB 2007); and
- California State Water Resources Control Board, Leaking Underground Storage Tanks Search Results (SWRCB 2007b).

A review of these databases identified two sites that are within one-quarter mile of the proposed 11-mile pipeline route and associated facilities. Two nearby leaking underground storage tank sites were identified on the Regional Water Quality Control Board, Central Valley Region Leaking Underground Storage Tank database last updated in April 2007. The two sites are located on Franklin Boulevard just south of Bilby Road in close proximity to the proposed pipeline route. The identified sites had leaked gasoline, but the cases for each site were closed, which indicates that clean-up pursuant to California Environmental Protection Agency (CalEPA) standards were completed with no further monitoring required.

4.5.2 Regulatory Setting

Pipeline Risk of Upset

Federal

The DOT provides oversight for the nation's natural gas pipeline transportation system. Its responsibilities are promulgated under Title 49, United States Code (USC) Chapter 601. The Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of gas and other hazardous materials by pipeline.

Two statutes provide the framework for the Federal pipeline safety program. The Natural Gas Pipeline Safety Act of 1968 as amended (NGPSA) authorizes the DOT to regulate pipeline transportation of natural (flammable, toxic, or corrosive) gas and other gases as well as the transportation and storage of liquefied natural gas (LNG). Similarly, the Hazardous Liquid Pipeline Safety Act of 1979 as amended (HLPSA) authorizes the DOT to regulate pipeline transportation of hazardous liquids (crude oil, petroleum products, anhydrous ammonia, and carbon dioxide). Both of these Acts have been recodified as 49 USC Chapter 601.

The OPS shares portions of this responsibility with State agency partners and others at the Federal, State, and local levels. The State of California is certified under 49 USC Subtitle VIII, Chapter 601, §60105. The State has the authority to regulate intrastate natural and other gas pipeline facilities. The California Public Utilities Commission (CPUC) is the agency authorized to oversee intrastate gas pipeline facilities, including those proposed by PG&E. The CPUC has rules governing design construction, testing, operation, and maintenance of gas gathering, transmission, and distribution piping systems (General Order No. 112-E). The California State Fire Marshal has jurisdiction for hazardous liquid pipelines.

The Federal pipeline regulations are published in Title 49 of the Code of Federal Regulations (CFR), Parts 190 through 199. 49 CFR 192 specifically addresses natural and other gas pipelines. Many of these pipeline regulations are written as performance standards. These regulations set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve the desired result.

The proposed 24-inch diameter transmission pipeline and ancillary facilities would be designed, constructed, operated, and maintained in accordance with 49 CFR 192. Since these are intrastate facilities, the CPUC would have the responsibility of enforcing

the Federal and State requirements. 49 CFR 192 is comprised of 15 subparts, which are summarized below:

- Subpart A, General – This subpart provides definitions, a description of the class locations used within the regulations, documents incorporated into the regulation by reference, conversion of service requirements, and other items of a general nature.
- Subpart B, Materials – This subpart provides the requirements for the selection and qualification of pipe and other pipeline components. Generally, it covers the manufacture, marking, and transportation of steel, plastic, and copper pipe used in gas pipelines and distribution systems.
- Subpart C, Pipe Design – This subpart covers the design (primarily minimum wall thickness determination) for steel, plastic, and copper pipe.
- Subpart D, Design of Pipeline Components – This subpart provides the minimum requirements for the design and qualification of various components (e.g. valves, flanges, fittings, passage of internal inspection devices, taps, fabricated components, branch connections, extruded outlets, supports and anchors, compressor stations, vaults, overpressure protection, pressure regulators and relief devices, instrumentation and controls, etc.
- Subpart E, Welding of Steel Pipelines – This subpart provides the minimum requirements for welding procedures, welder qualification, inspection and repair/replacement of welds in steel pipeline systems.
- Subpart F, Joining of Materials Other Than By Welding – This subpart covers the requirements for joining, personnel and procedure qualification, and inspection of cast iron, ductile iron, copper, and plastic pipe joints.
- Subpart G, General Construction Requirements for Transmission Lines and Mains – This subpart provides the minimum construction requirements, including, but not limited to: inspection of materials, pipe repairs, bends and elbows, protection from hazards, installation in the ditch, installation in casings, underground clearances from other substructures, and minimum depth of cover.
- Subpart H, Customer Meters, Service Regulators and Service Lines – This subpart prescribes the minimum requirements for these components.
- Subpart I, Requirements for Corrosion Control – This subpart provides the minimum requirements for cathodic protection systems, required inspections and monitoring, remedial measures, and records maintenance.
- Subpart J, Testing Requirements – This subpart prescribes the minimum leak and strength test requirements.
- Subpart K, Uprating – This subpart provides the minimum requirements for increasing the maximum allowable operating pressure.

- Subpart L, Operations – This subpart prescribes the minimum requirements for pipeline operation, including: procedure manuals, change in class locations, damage prevention programs, emergency plans, public awareness programs, failure investigations, maximum allowable operating pressures, odorization, tapping, and purging.
- Subpart M, Maintenance – This subpart prescribes the minimum requirements for pipeline maintenance, including: line patrols, leakage surveys, line markers, record keeping, repair procedures and testing, compressor station pressure relief device inspection and testing, compressor station storage of combustible materials, compressor station gas detection, inspection and testing of pressure limiting and regulating devices, valve maintenance, prevention of ignition, etc.
- Subpart N, Qualification of Pipeline Personnel – This subpart prescribes the minimum requirements for operator qualification of individuals performing covered tasks on a pipeline facility.
- Subpart O, Pipeline Integrity Management – This subpart was promulgated on December 15, 2003. It requires operators to implement pipeline integrity management programs on the gas pipeline systems.

In general, the requirements of the Federal regulations become more stringent as the human population density increases. To this end, 49 CFR 192 defines area classifications, based on population density in the vicinity of a pipeline and specifies more rigorous safety requirements for more heavily populated areas. The class location is an area that extends 660 feet (220 yards) on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined as follows:

- Class 1 - Location with 10 or fewer buildings intended for human occupancy.
- Class 2 - Location with more than 10 but less than 46 buildings intended for human occupancy.
- Class 3 - Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of a building, or small well-defined outside area occupied by 20 or more people on at least five days a week for 10 weeks in any 12-month period.
- Class 4 - Location where buildings with four or more stories aboveground are prevalent.

Pipeline facilities located within class locations representing more populated areas are required to have a more conservative design. For example, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well

as drainage ditches at public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. All pipelines installed in navigable rivers, streams, and harbors must have a minimum cover of 48 inches in soil or 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4 locations). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas.

The proposed pipeline facilities would be constructed within Class 1, 2, and 3 locations (PG&E 2007). Although an increase in population density adjacent to the proposed pipeline route is not anticipated (see Section 4.11, Land Use and Planning), PG&E would be required to comply with the more stringent requirements, reduce the maximum allowable operating pressure (MAOP), or replace the segment with pipe of sufficient grade and wall thickness to comply with 49 CFR 192 for the new class location if there should be an increase in population density in the area sufficient to change the Class location.

Pipeline Integrity Management

49 CFR 192 Subpart O, Pipeline Integrity Management was established following a series of pipeline incidents with severe consequences. This subpart requires operators of gas pipeline systems in High Consequence Areas (HCAs) to significantly increase their minimum required maintenance and inspection efforts. For example, all lines located within HCAs must be analyzed by conducting a baseline risk assessment. In general, the integrity of the lines must also be evaluated using an internal inspection device or a direct assessment, as prescribed in the regulation. Two incidents in particular that are discussed below raised public concern regarding pipeline safety and necessitated these relatively new requirements.

Bellingham, Washington, June 10, 1999. According to the National Transportation Safety Board (NTSB) accident report, “about 3:28 p.m., Pacific daylight time, on June 10, 1999, a 16-inch diameter steel pipeline owned by Olympic Pipe Line Company ruptured and released about 237,000 gallons of gasoline into a creek that flowed through Whatcom Falls Park in Bellingham, Washington. About one and one half hours after the rupture, the gasoline ignited and burned approximately one and one half miles

along the creek. Two 10-year-old boys and an 18-year-old young man died as a result of the accident. Eight additional injuries were documented. A single-family residence and the City of Bellingham's water treatment plant were severely damaged. As of January 2002, Olympic estimated that total property damages were at least $45 million.

The major safety issues identified during this investigation are excavations performed by IMCO General Construction, Inc., in the vicinity of Olympic's pipeline during a major construction project and the adequacy of Olympic Pipe Line Company's inspections thereof; the adequacy of Olympic Pipe Line Company's interpretation of the results of in-line inspections of its pipeline and its evaluation of all pipeline data available to it to effectively manage system integrity; the adequacy of Olympic Pipe Line Company's management of the construction and commissioning of the Bayview products terminal; the performance and security of Olympic Pipe Line Company's supervisory control and data acquisition system; and the adequacy of Federal regulations regarding the testing of relief valves used in the protection of pipeline systems." (NTSB 2002)

Carlsbad, New Mexico, August 19, 2000. Per the NTSB accident report, "At 5:26 a.m., mountain daylight time, on Saturday, August 19, 2000, a 30-inch diameter natural gas transmission pipeline operated by El Paso Natural Gas Company ruptured adjacent to the Pecos River near Carlsbad, New Mexico. The released gas ignited and burned for 55 minutes. Twelve persons who were camping under a concrete-decked steel bridge that supported the pipeline across the river were killed and their three vehicles destroyed. Two nearby steel suspension bridges for gas pipelines crossing the river were extensively damaged. According to El Paso Natural Gas Company, property and other damages or losses totaled $998,296.

The major safety issues identified in this investigation were the design and construction of the pipeline, the adequacy of El Paso Natural Gas Company's internal corrosion control program, the adequacy of Federal safety regulations for natural gas pipelines, and the adequacy of Federal oversight of the pipeline operator." (NTSB 2003)

Pipeline Integrity Management Regulations

As noted earlier, 49 CFR 192, Subpart O, Pipeline Integrity Management is relatively new and was developed in response to the two major pipeline incidents discussed above. In 2002, Congress passed an Act to strengthen the pipeline safety laws. The Pipeline Safety Improvement Act of 2002 (HR 3609) was passed by Congress on November 15, 2002, and was signed into law by the President in December 2002. As of December 17, 2004, gas transmission operators of pipelines in HCAs were required

to develop and follow a written integrity management program, which contained all of the elements prescribed in 49 CFR 192.911 and addressed the risks on each covered transmission pipeline segment.

The DOT (68 Federal Register 69778, 69 Federal Register 18228, and 69 Federal Register 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in 49 CFR 192.903. The OPS published a series of rules from August 6, 2002, to May 26, 2004 (69 Federal Register 69817 and 29904), that define HCAs where a gas pipeline accident could do considerable harm to people and their property. This definition satisfies, in part, the Congressional mandate in 49 USC 60109 for the OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. Both methods are prescribed by 49 CFR 192.903. The first includes:

- Current Class 3 and 4 locations;
- Any area in Class 1 or 2 locations where the potential impact radius is greater than 660 feet (200 meters) and the area within a potential impact circle contains 20 or more buildings intended for human occupancy; or
- Any area in Class 1 or 2 locations where the potential impact circle includes an “identified site.”

In the second method, an HCA includes any area within a potential impact circle that contains:

- 20 or more buildings intended for human occupancy; or
- An “identified site.”

“Identified sites” include areas such as beaches, playgrounds, recreational facilities, camp grounds, outdoor theaters, stadiums, recreational areas, religious facilities, and other areas where high concentrations of the public may gather periodically as defined by 49 CFR 192.903.

The “potential impact radius” is calculated as the product of 0.69 and the square root of the maximum allowable operating pressure of the pipeline (in pounds per square inch gauge (psig)), multiplied by the pipeline diameter in inches squared ($R = 0.69*(MAOP*d^2)^{0.5}$). The potential impact circle is a circle with a radius equal to the potential impact radius.

Once a pipeline operator has identified the HCAs along its pipeline(s), it must apply the elements of its integrity management program to those segments of the pipeline within the HCAs. The pipeline integrity management rule for HCAs requires inspection of the entire pipeline within HCAs every seven years.

As noted earlier, the proposed pipeline facilities are located within Class 1, 2, and 3 areas. As a result, using the first HCA definition, the portions of the line within Class 3 areas would be within an HCA. For the proposed Project, the impact radius is 440 feet using the 24-inch pipe diameter and an MAOP of 720 psig. Using the second HCA definition, the portion of the proposed pipeline that would be nearest the existing apartments south of Poppy Ridge Road (Station 525+00) would be located within an HCA. As a result, certain portions of the proposed Project would be required to be included in PG&E's Pipeline Integrity Management Plan. Should the population density increase, additional portions of the proposed pipeline may become located within an HCA. Should this occur, PG&E would be required by Federal regulation to include the affected pipe segments in its Pipeline Integrity Management Plan.

State

As noted earlier, intrastate pipeline facilities such as those that would be associated with the proposed Project would be under the jurisdiction of the CPUC, as a result of their certification by the OPS. (The State of California is certified under 49 USC Subtitle VIII, Chapter 601, §60105.) The State requirements for designing, constructing, testing, operating, and maintaining gas piping systems are stated in CPUC General Order Number 112. These rules incorporate the Federal regulations by reference, but for natural gas pipelines, they do not impose any additional requirements affecting public safety.

Hazardous Materials

Several Federal agencies regulate hazardous materials, including the U.S. Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the DOT. Applicable Federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the CFR. Lead exposure guidelines are provided by the U.S. Department of Housing and Urban Development.

Lead in Building Materials

Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and in soils around buildings and structures painted with lead-

based paint. In 1978, the Federal government required the reduction of lead in house paint to less than 0.06 percent (600 parts per million). However, some paints manufactured after 1978 for industrial or marine uses legally contain more than 0.06 percent lead. Excessive exposure to lead (even low levels of lead) can result in the accumulation of lead in the blood, soft tissues, and bones. Children are particularly susceptible to potential lead-related health problems because it is easily absorbed in developing systems and organs.

Worker Safety

The DOT requires that gas pipeline operators meet certain qualifications. For the proposed Project, construction crews are not required to meet these qualifications because they are not considered gas pipeline operators. However, when the proposed pipeline is connected to the main gas transmission system, PG&E's operators would be subject to the DOT qualifications.

Hazardous Materials Transportation

The DOT has developed regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The DOT regulations specify packaging requirements for different types of materials. The EPA has also promulgated regulations for the transport of hazardous wastes. These more stringent requirements include tracking shipments with manifests to ensure that wastes are delivered to the intended destination.

State

The CalEPA establishes regulations governing the use of hazardous materials in the State. The Office of Emergency Services (OES) coordinates State and local agencies and resources for educating, planning, and warning citizens of hazardous materials, hazardous materials emergencies, including organized response efforts in case of emergencies. The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the State enforcement agencies for hazardous materials transportation regulations. Transporters of hazardous materials and waste are responsible for complying with all applicable packaging, labeling, and shipping regulations.

Department of Toxic Substances Control

Within CalEPA, the DTSC has primary regulatory responsibility for hazardous waste management and cleanup. Requirements place "cradle-to-grave" responsibility for hazardous waste disposal on the shoulders of hazardous waste generators. Generators must ensure that their wastes are disposed of properly, and legal requirements dictate the disposal requirements for many waste streams (e.g., banning many types of hazardous wastes from landfills). Enforcement of regulations has been delegated to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the Hazardous Waste Control Law. State regulations applicable to hazardous materials are contained in Title 22 of the California Code of Regulations (CCR). Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials management. Title 8 of the CCR contains Construction Safety Orders pertaining to lead.

Hazardous Materials Management Plans

In January 1996, CalEPA adopted regulations implementing a "Unified Hazardous Waste and Hazardous Materials Management Regulatory Program" (Unified Program). The six program elements of the Unified Program are: (1) hazardous waste generators and hazardous waste on-site treatment; (2) underground storage tanks; (3) above-ground storage tanks; (4) hazardous material release response plans and inventories; (5) risk management and prevention program; and (6) Uniform Fire Code hazardous materials management plans and inventories. The program is implemented at the local level by a local Certified Unified Program Agency (CUPA), which is responsible for consolidating the administration of the six program elements within its jurisdiction. The San Joaquin Environmental Health Department and the Sacramento County Environmental Management Department are the CUPAs that serve the proposed Project area.

State and Federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law (number four from above), sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated

emergency response agencies, to illustrate on a diagram where the materials are stored on-site, to prepare an emergency response plan, and to train employees to use the materials safely.

Worker Safety

Occupational safety standards exist in Federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (CalOSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, CalOSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle. For example, manufacturers are to appropriately label containers, Material Safety Data Sheets are to be available in the workplace, and employers are to properly train workers.

Local

Sacramento County Environmental Management Department

The Sacramento County Environmental Management Department (EMD) is responsible for promoting a safe and healthy environment in the county. It oversees the cleanup and removal of hazardous waste within the county and acts as the local CUPA. The EMD also provides the necessary permits required for hazardous materials storage and use, monitoring wells, removal of leaky underground storage tanks, and permits required for the collection, transport, use, or disposal of refuse. The EMD, local fire departments, Sacramento County Sheriff's Department, and the Department of General Services Emergency Operations Division are responsible for implementing various aspects of Sacramento County's emergency plan. The plan includes a "Hazardous Materials Incident Response Plan."

Sacramento County General Plan

The following Sacramento County General Plan goals and policies related to hazards and hazardous materials are applicable to the proposed Project and are found in the Hazardous Materials and Public Facilities elements (Sacramento County 1993 and 1997).

HM-4 The handling, storage, and transport of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards.

HM-7 Encourage the implementation of workplace safety programs and to the best extent possible ensure that residents who live adjacent to industrial or commercials facilities are protected from accidents and the mishandling of hazardous materials.

HM-10 Reduce the occurrences of hazardous material accidents and the subsequent need for incident response by developing and implementing effective prevention strategies.

HM-11 Protect residents and sensitive facilities from incidents which may occur during the transport of hazardous materials in the County.

Public Facilities Element

PF-74 Energy production and distribution facilities shall be designed and sited in a manner so as to protect the residents of Sacramento County from the effects of a hazardous materials incident.

San Joaquin County Environmental Health Department

The San Joaquin County Environmental Health Department (EHD) enforces environmental health regulations associated with many business and construction activities. The EHD also works with Emergency Response teams in the event of a hazardous waste incident. As the CUPA, the EHD works with other agencies to coordinate hazardous materials program inspection and permitting activities. The EHD administers the Hazardous Waste Generator, Hazardous Waste Onsite Treatment (Tiered Permitting), and Underground Storage Tank programs (San Joaquin County 2007).

San Joaquin County General Plan

The following policies related to Hazards and Hazardous Materials from the San Joaquin County General Plan were considered in this analysis (San Joaquin County 1996):

Hazardous Materials and Wastes Policies (Chapter V)

1. Hazardous materials and wastes shall not contaminate air or water resources or soils.

2. The use, storage and disposal of hazardous materials and wastes shall be controlled to prevent harm to individuals.

3. Land Uses and structures which contain hazardous materials or wastes which may be a safety hazard for nearby areas shall be located away from existing and planned populated areas.

5. All development shall be consistent with the County's Waste Management Plans.

4.5.3 Significance Criteria

An adverse impact regarding hazards and hazardous materials is considered significant and would require mitigation if the Project would:

- Expose people to an unacceptable risk of existing or potential hazards, including upset and accident conditions involving the risk for fires, explosions, or the release of hazardous materials into the environment;
- Create significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste that could adversely affect existing or proposed schools, residential areas, or other sensitive receptors;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands;
- Significantly increase fire hazard in areas with flammable materials;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment; or
- For a project located within an airport land use plan, or within two miles of a public airport or private airstrip, result in a safety hazard for people residing or working in the project area.

4.5.4 Impact Analysis and Mitigation

Applicant Proposed Measures

Applicant Proposed Measures (APMs) have been identified by PG&E in its Environmental Analysis prepared for the CSLC. APMs that are relevant to this section are presented below. This impact analysis assumes that all APMs would be implemented as defined below. Additional mitigation measures are recommended in this section if it is determined that APMs do not fully mitigate the impacts for which they are presented.

APM HAZ-1. Procedures for Encountering Contamination. If evidence of soil contamination is encountered during construction, work shall cease until the area can be tested, and, if necessary, remediated. As part of this process, PG&E shall ensure that any necessary investigation and/or remediation activities conducted at the Project site are coordinated with the County's Fire Departments, the Sacramento County Environmental Management Department, and the San Joaquin County Department of Environmental Health, and, if needed, other appropriate State agencies (e.g., State Water Resources Control Board or Department of Toxic Substances Control). Once the site is remediated, construction can continue. PG&E shall continue to update their records concerning contamination or hazards that may be present at facilities or sites adjacent to the Project site, and take necessary action to ensure that the health and safety of the site workers are protected.

APM HAZ-2. Fire Protection Plan. PG&E shall develop and implement a fire prevention plan. The plan shall be developed in consultation with the State Fire Marshall or other responsible fire-fighting agencies. The plan shall include specific measures to prevent ignition and spread of a wildland fire, including, but not limited to: required use of fire retardant blankets or other suitable barriers in areas where pipe welding, grinding, or cutting would occur; required presence of appropriate fire suppression equipment available at all times during activities that may result in ignition of surrounding vegetation; requirement of a training plan for all personnel prior to construction activities; and a two-hour fire watch following pipe welding, grinding and cutting activities.

Pipeline Risk of Upset

A probabilistic pipeline risk assessment has been conducted for the proposed Project (see Appendix D, System Safety and Risk of Upset). This analysis considers the actual site population density, as well as the characteristics of the pipeline contents in the event of an unintentional release. The analysis used a baseline frequency of DOT reportable unintentional releases of 0.41 incidents per 1,000 mile-years. This is the actual frequency of reportable natural gas transmission pipeline releases from 2002 through 2006.

The risk assessment includes several components, including establishment of conditional probabilities, release modeling using CANARY version 4.2 software, explosion modeling, fire modeling, and flash fire modeling. The probability and modeling data were used to estimate risks to humans, individual risks, and anticipated societal impacts. Below are summaries of the estimated risks to humans, individual risks, and anticipated societal impacts. Refer to Appendix D, System Safety and Risk of Upset, for the complete pipeline risk assessment analysis.

Risks to Humans

In analyzing the potential risk to humans, the following assumptions were made:

- Torch Fires versus Flash Fires: The DOT data do not provide any differentiation regarding the type of fire (torch versus flash). However, since there are a relatively large number of reported explosions in the DOT database, it is likely that the number of flash fires is limited. There are also few historical flash fires on record. The analyses of the proposed Project assumed that 10 percent of the fires would be flash fires and 90 percent would be torch fires.
- Residences: In determining the distances from the proposed pipeline alignment to existing and proposed residences, the nearest distance from the proposed pipeline alignment to each residence was used. For individuals outside their homes, the analysis assumed that they would be located near the primary structure of the home. The analysis assumed that in the event natural gas migrates into residences, the occupants would evacuate.
- Flash Fire or Indoor Explosion Exposures to Residences: Should the combustible portion of a vapor cloud migrate to nearby residences before ignition, a flash fire would occur if the ignition were outdoors, or an explosion would occur indoors. The analyses assumed a 100 percent probability of serious injury or fatality to those exposed to a flash fire. However, those housed within their residences were assumed to be sufficiently protected from a flash fire to prevent serious injury or fatality. The analyses assumed that

those protected inside a residence would be able to evacuate safely should the structure catch fire, after the flash fire subsided. The analyses assumed that occupants of these residences would be outside their homes, exposed to flash fire effects, an average of 10 percent of the time, or roughly 17 hours per week. In the event that natural gas would migrate inside the structure, the analyses assumed a 100 percent probability of serious injury or fatality. The analyses assumed a 90 percent probability that occupants would be evacuated by emergency responders, or would evacuate the structure on their own once they identify the gas odorant.

- Torch Fire Exposures to Residences: The analyses assumed that residents of all buildings within the 3,500 Btu/hour-square-foot heat flux contour would be exposed to a 0.15 probability of fatality while they are outside their homes. The analyses assumed that individuals would be sheltered from injurious radiant heat impacts while inside their home. The analyses also assumed that those protected inside their residence would be able to evacuate safely should the structure catch fire. The analyses assumed that occupants of these residences would be outside their homes, exposed to torch fire effects, an average of 10 percent of the time, or roughly 17 hours per week.

- Torch Fire Exposures to Vehicle Occupants: Because the size of anticipated fires is small, the analyses assumed that occupants in passing vehicles would be protected from the radiant heat. The analyses assumed that serious injuries and fatalities would only occur to those exposed directly to the flame, which would extend an estimated 30 feet from the release for a full bore rupture.

- Flash Fire Exposure to Vehicle Occupants: There is little actual or experimental data available for natural gas flash fires. Based on a full bore release at 45° above the horizon at the modeled conditions, the flammable concentration of the vapor cloud would be less than 50 feet wide, measured perpendicular to the release. A vehicle traveling at 40 miles per hour (mph) perpendicular to the release would only be within the flammable portion of the vapor cloud for less than one second. Considering the variety of possible release angles, the likely short duration of exposure, and the protection afforded by the vehicle, these analyses assumed that 10 percent of the occupants of vehicles exposed to the modeled maximum horizontal projection of a flash fire would be seriously injured or killed. It should be noted that 100 percent casualties are assumed for similar analyses used in the United Kingdom. However, there is evidence that those exposed to flash fires can survive. Although natural gas flash fires are rare, an event occurred on October 1982 which is noteworthy. This event is noted in the Report on a Study of International Pipeline Accidents (HSE 2000). In this case, an end cap blew off the end of a natural gas pipeline in Pine Bluff, Arkansas. The ignition of the resulting gas cloud was delayed, until the flammable portion of the cloud reached a nearby welding machine. As stated in the report, “All seven persons at the accident site were engulfed in the flash-fire. The two welder-helpers, who were wearing goggles but not welding helmets and the

two company employees standing atop the ditch at the east and south end were placed in intensive care at a local hospital. Another worker on top the ditch was admitted to the hospital in a serious but stable condition. The two welders, who were under the pipe when the fire erupted and were more sheltered from the fire, were treated and released from the hospital. While none of the workmen were killed, they were not representative of the population as a whole; they were relatively young, fit, and wearing working clothes. Children or the elderly (perhaps 50 percent of the population), or those wearing less protective clothing in a similar fire would probably not have survived."

- Explosions: The peak overpressures resulting from an atmospheric explosion are anticipated to be below the threshold required to cause serious injuries or fatalities, due to the open surroundings and unconfined nature of a release. However, should natural gas migrate into residences, the overpressures from an explosion within a confined space could be life threatening.

Individual Risk of Serious Injuries or Fatalities

In the following paragraphs, the impacts related to serious injuries and fatalities are described for individuals exposed to a fire or explosion. The lengths of pipeline that could impact the public are summarized below, for each of the identified conditions:

- Flash Fire or Indoor Explosion, Full Bore Release: These impacts could be significant within 201 feet of the proposed pipeline. A portion of the proposed pipeline (4,162 feet) would be located within 201 feet of existing and proposed residences, including those associated with the proposed Franklin Crossing Subdivision.
- Flash Fire or Indoor Explosion, 1-inch Diameter Release: These impacts could be significant within 23 feet of the pipeline. None of the proposed pipeline would be located within this proximity of existing and proposed residences.
- Torch Fire, Full Bore Release: These impacts could be significant within 162 feet of the pipeline. A portion of the proposed pipeline (3,325 feet) would be located within this distance of existing and proposed residences.
- Torch Fire, 1-inch Diameter Release: These impacts could be significant within 134 feet of the pipeline. A portion of proposed pipeline (2,825 feet) would be within this distance of existing and proposed residences.
- Flash Fire, Full Bore Release, Impacts to Vehicular Traffic: Approximately 32,742 lineal feet (6.2 miles) of the proposed pipeline would be within 201 feet of existing roadways (201 feet is the maximum distance from a release that would be expected to cause a significant impact). An average traffic speed of 40 mph for determining potential exposure has been assumed. Where available, the numbers of average daily traffic trips for each roadway were taken from EIR Section 4.7, Traffic and Transportation. For roadways

where traffic count data were not available, an average of 500 trips per day was assumed. This results in an average exposure probability of 8.59. In other words, an average of 8.6 vehicles would be exposed to the 6.2 miles of pipeline that would be within 201 feet at any one time.

Impact HAZ-1. Risk of Serious Injuries and Fatalities Due to Project Upset

The proposed Project would result in a risk of serious injury or fatality greater than 1:1,000,000. (Significant, Unavoidable).

The results of the individual risk analyses are shown below in Table 4.5-1. The total calculated individual risk of serious injury or fatality is 4.08×10^{-6}. This represents a 1:245,000 likelihood of the proposed Project causing a serious injury or fatality. This value is greater than the generally accepted significance criteria of 1:1,000,000 likelihood of a serious injury or fatality. As a result, the individual risk from the proposed Project is considered significant (Class I). The significance of this risk is primarily due to the individual risks caused by exposure to possible flash fires resulting from pipeline ruptures, primarily along Franklin Boulevard, where over five miles of roadway are within the hazard footprint. If the anticipated frequency of pipeline ruptures within approximately 200 feet of the roadways and residences were reduced, then the resulting individual risks posed by the proposed Project would be reduced proportionally.

Table 4.5-1. Individual Risk Summary

Release	Baseline Probability of Reportable Release	Affected Pipeline Length (mile)	Probability of Exposure	Conditional Probability of Event	Probability of Serious Injury or Fatality to Exposed Individual	Annual Risk of Individual Serious Injury or Fatality
1-inch Diameter Torch Fire Residences	4.10×10^{-4}	0.54	0.10	0.0523	0.15	1.72×10^{-7}
1-inch Diameter Flash Fire or Indoor Explosion Residences	4.10×10^{-4}	0.00	0.10	0.0058	1.00	0.00
Rupture Torch Fire Residences	4.10×10^{-4}	0.63	0.10	0.0156	0.15	6.04×10^{-8}

Release	Baseline Probability of Reportable Release	Affected Pipeline Length (mile)	Probability of Exposure	Conditional Probability of Event	Probability of Serious Injury or Fatality to Exposed Individual	Annual Risk of Individual Serious Injury or Fatality
Rupture Flash Fire or Indoor Explosion Residences	4.10×10^{-4}	0.79	0.10	0.0017	1.00	5.60×10^{-8}
1-inch Diameter Outdoor Explosion Residences	4.10×10^{-4}	0.00	0.70	0.0420	0.10	0.00
Rupture Outdoor Explosion Residences	4.10×10^{-4}	0.00	0.70	0.0126	0.10	0.00
1-inch Diameter Torch Fire Roadways	4.10×10^{-4}	N/A	N/A	0.0523	N/A	0.00
1-inch Diameter Flash Fire Roadways	4.10×10^{-4}	N/A	N/A	0.0058	N/A	0.00
Rupture Torch Fire Roadways	4.10×10^{-4}	N/A	N/A	0.0156	N/A	0.00
Rupture Flash Fire or In-Vehicle Explosion Roadways	4.10×10^{-4}	6.20	8.59	0.0017	0.10	3.79×10^{-6}
Total						**4.08×10^{-6}**

Mitigation Measure

MM HAZ-1a. Reduce the Potential for Serious Injuries and Fatalities. All pipe to be installed within 200 lineal feet of a roadway or structure intended for habitation (including the proposed Franklin Crossing Subdivision) shall meet the following requirements:

- Line pipe shall be manufactured in the year 1990 or later.

- A 6-inch wide polyethylene marker tape shall be installed approximately 12- to 18-inches below the ground surface, above the center of the pipeline. The marking tape shall be brightly colored and shall be marked with an appropriate warning (e.g., Warning – High Pressure Natural Gas Pipeline).
- The pipe wall thickness shall be at least 0.375 of an inch.
- The depth of cover shall be at least 48 inches.
- One hundred (100) percent of the circumferential welds shall be radiographically inspected in accordance with American Petroleum Institute (API) Standard 1104, Welding of Pipelines and Related Facilities.
- If the in-line inspection required by Mitigation Measure HAZ-1b is not implemented because the pipeline is operated below a hoop stress of 40 percent Specified Minimum Yield Strength, then a close interval cathodic protection survey shall be performed at least every seven years and shall comply with (a) the National Association of Corrosion Engineers (NACE) Recommended Practice RP0792 – Standard Format for Computerized Close Interval Survey Data and (b) NACE Recommended Practice RP0502 – Pipeline External Corrosion Direct Assessment Methodology, or the entire portion of the pipeline within 200 feet of a roadway or structure shall be included in PG&E's Integrity Management Program.
- PG&E shall demonstrate to the California State Lands Commission and the California Pubic Utilities Commission that the Emergency Response Plans include measures to isolate pedestrian and vehicular traffic from release locations and the anticipated extent of vapor clouds within the flammable limit.

MM HAZ-1b. Implement Operation and Maintenance (O&M) Plan. Prior to placing the pipeline system into service, PG&E shall submit to the California State Lands Commission and the California Public Utilities Commission an O&M Plan. The O&M Plan shall address internal and external maintenance inspections of the completed facility, including but not limited to details of integrity testing methods to be applied, corrosion monitoring and testing of the cathodic protection system, and leak monitoring. PG&E shall conduct an in-line inspection of the pipeline if the Maximum Allowable Operating Pressure is raised to a pressure that creates a circumferential stress greater than 40 percent Specified Minimum Yield Strength. The O&M Plan shall also specify the Integrity management procedures for High Consequence Area portions of the pipeline. In addition, the O&M Plan shall also include a preventative mitigation

measure analysis for the use of automatic shutdown valves per Federal Department of Transportation Part 192.935(c) requirements.

Rationale for Mitigation

Mitigation Measures HAZ-1a and HAZ-1b are designed to minimize the likelihood and consequences of pipeline ruptures. The natural gas pipeline incidents which were identified as "ruptures" in the DOT database from 2002 through 2006 have been reviewed. The following points are worth noting:

- Forty-six percent of the ruptures were considered longitudinal tears or cracks. Of the components where the manufacturing date was provided, the average date of manufacture was 1955, roughly 50 years old at the time of failure. Roughly three-quarters of these incidents were caused by third party damage and external corrosion, with the remainder being caused by a variety of factors.
- Fifty percent of the ruptures were considered circumferential separation. For these cases, there were no predominant causes.
- Four percent of the ruptures were considered "other".

Third Party Damage Mitigation Effectiveness

In western Europe, the effectiveness of various forms of third party damage mitigation has been studied (HSE 2001). The findings are summarized below:

- Increased Wall Thickness: For 24-inch diameter pipe, a wall thickness of 0.375 of an inch or greater was found to reduce the frequency of third party caused unintentional releases by 80 percent. (The incident rate was 20 percent of the norm.)
- Increased Depth of Cover: Pipelines with a depth of cover of 48 inches or greater experienced a 30 percent reduction in third party caused incidents. (The incident rate was 70 percent of the norm.)
- Supplemental Third Party Protection: Pipelines protected with some form of third party warning device (e.g., marker tape, concrete cap, steel plates, etc.) experienced a reduction in third party caused incidents of 10 percent. (The incident rate was 90 percent of the norm.)

By implementing the above measures, the frequency of third party caused incidents may be reduced by 80 to 90 percent.

External Corrosion Mitigation Effectiveness

Although data are not available to quantify the effectiveness of the external corrosion mitigation measures, the qualitative impacts can be summarized as follows:

- Increased Wall Thickness: Although increased pipe wall thickness does not prevent external corrosion, it allows more time to pass before a leak may result. This increased time period increases the likelihood that the anomaly would be identified by the operator before a release occurs.
- In-Line Inspection: Internal inspections of pipelines using modern techniques can identify external corrosion and other pipe wall anomalies, reducing the likelihood of a release.
- Close Interval Survey: Close interval cathodic protection surveys can identify coating defects and potential metal loss before a release is experienced.

Circumferential Separation

Inspecting 100 percent of the circumferential welds in accordance with API 1104 would decrease the likelihood of weld defects, which caused a portion of the circumferential separation ruptures noted in the DOT database.

Residual Impacts

With the proposed mitigations, the individual risk of serious injury or fatality would be reduced by up to 50 percent, to 2.04×10^{-6}. This represents a 1 in 490,000 likelihood that the proposed Project would cause a serious injury or fatality. However, the individual risk would still exceed individual risk significance thresholds. Therefore, impacts would be significant and unavoidable (Class I).

Anticipated Societal Impacts

Societal risk is the probability that a specified number of people would be affected by a given event. The accepted number of casualties is relatively high for lower probability events and much lower for more probable events. This analysis included the following assumptions:

- Flash Fire, Full Bore Release, Residential Impacts: These impacts are localized. For the modeled release, the maximum width of the vapor cloud within the explosive limit is roughly 30 feet wide, measured perpendicular to the release. As noted earlier, the portion of the vapor cloud within the flammable limit extends only 201 feet from the pipeline. As a result, the

analysis assumed that only one structure, housing four individuals, would be affected by each of these events.

- Flash Fire, 1-inch Diameter Release, Residential Impacts: These impacts are very localized. For the modeled release, the maximum width of the vapor cloud within the explosive limit would be less than five feet wide, measured perpendicular to the release. As noted earlier, the portion of the vapor cloud within the flammable limit extends only 23 feet from the pipeline. As a result, the analysis assumed that only one structure, housing four individuals, would be affected by each of these events.
- Torch Fire, Full Bore Release, Residential Impacts: These impacts are very localized. For the modeled release, the 3,500 btu/hr-ft^2 isopleth extends less than 100 feet on either side of the release, measured perpendicular to the release. As a result, the analysis assumed that only one structure, housing four individuals, would be affected by each event.
- Torch Fire, 1-inch Diameter Release, Residential Impacts: These impacts are nearly identical to the full bore release discussed above. As a result, the analysis assumed that only one structure, housing four individuals, would be affected by each event.
- Flash Fire or In-Vehicle Explosion, Full Bore Release, Impacts to Vehicular Traffic: These impacts are localized. For the modeled release, the maximum width of the vapor cloud within the explosive limit is roughly 30 feet wide, measured perpendicular to the release. As noted earlier, the portion of the vapor cloud within the flammable limit would extend only 201 feet from the pipeline. As a result, the analysis assumed that only one vehicle, with two occupants, would be affected by each event.

The results of the societal risk analyses are shown in Table 4.5-2. The ratio of site casualties to the societal risk criteria is less than 1.0 for each situation. As a result, the societal risk is not considered significant, using the stated societal risk criteria. Impacts associated with societal risk would be less than significant (Class III).

Contamination from Leaks, Spills, and/or Handling of Hazardous Materials

The potential for accidental releases of hazardous materials could result from construction, operation, and maintenance activities including equipment fuel leaks (e.g. hydraulic fluid), fuel spills, and other events. Construction and operation of the proposed Project would primarily occur in rural areas; however, several locations along the proposed pipeline route are within close proximity to residences and would pose a risk to public safety based on the limited number of people that could be exposed to any Project-related hazards such as accidental releases of fuel or lubricants. PG&E would

Table 4.5-2 Societal Risk Summary

Release	Exposure Probability	Probability of Serious Injury or Fatality to Exposed Individuals	Population Exposed	Number of Site Casualties (SC)	Societal Risk Criteria (SRC)	SC/SRC
1-inch Diameter Torch Fire Residences	1.15e-06	0.15	4	0.60	30	0.02
1-inch Diameter Flash Fire or Indoor Explosion Residences	0.00e-00	1.00	N/A	N/A	N/A	N/A
Rupture Torch Fire Residences	4.03e-07	0.15	4	0.60	40	0.02
Rupture Flash Fire or Indoor Explosion Residences	5.60e-08	1.00	4	4.00	100	0.04
1-inch Diameter Outdoor Explosion Residences	0.00e-00	0.10	N/A	N/A	N/A	N/A
Rupture Outdoor Explosion Residences	0.00e-00	0.10	N/A	N/A	N/A	N/A
1-inch Diameter Torch Fire Roadways	0.00e-00	N/A	N/A	N/A	N/A	N/A
1-inch Diameter Flash Fire Roadways	0.00e-00	N/A	N/A	N/A	N/A	N/A
Rupture Torch Fire Roadways	0.00e-00	N/A	N/A	N/A	N/A	N/A
Rupture Flash Fire or In-Vehicle Explosion Roadways	3.79e-05	0.10	2	0.20	5	0.04

prepare and implement a Spill Prevention, Control, and Countermeasure (SPCC) plan for the proposed Project as required by the Storm Water Pollution Prevention Plan (SWPPP) and would include action measures to minimize the potential for accidental releases of hazardous materials into the environment (see Section 2.3.5, Construction Contingency Planning). The Central Valley Regional Water Quality Control Board (CVRWQCB) would review and monitor the effectiveness of the SPCC and SWPPP through mandatory reporting by PG&E as required under those plans.

Construction activities associated with the proposed Project would involve storage, transport, and handling of hazardous materials within one-quarter mile of the Franklin School, located approximately 1,100 feet to the west of the construction yard south of Bilby Road. Although the construction yard could contain hazardous materials, the yard would be temporary and the hazardous materials used are not considered acutely hazardous, would not be disposed of on the yard site, nor would they result in hazardous emissions to neighboring properties. The proposed pipeline route is located over one-quarter mile (i.e., approximately 1,800 feet) from the Franklin Elementary School and the proposed Miwok Elementary School. Potential impacts associated with contamination due to leaks, spills, and/or storage and handling of hazardous materials impacts would be less than significant (Class III).

Contamination from Lead-based Paint

Construction of the Project would involve the demolition and removal of the bridge crossing the Cosumnes River. As described in the Project Description Section 2.3.4, Bridge Removal, a temporary work platform with containment materials would be installed to capture and collect any loose paint debris and all bridge cables would be wrapped to contain the paint coatings. The bridge removal would not involve onsite paint removal techniques that could release lead-based paint particles into the air. The bridge is located in an area without residences and access to the site would be restricted to authorized work crews during demolition. Material from the bridge removal would be hauled off-site and deposited in the nearest landfill classified to accept lead-based paint. Potential impacts would be less than significant (Class III).

Exposure of Contamination by Excavation

The Project site is not on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, two nearby leaking underground storage tank sites were identified on the CVRWQCB Leaking Underground Storage Tank database last updated in April 2007. The two sites are located on Franklin Boulevard

near Bilby Road in close proximity to the proposed pipeline route. The identified sites had leaked gasoline, but the cases for each site are currently closed. This indicates that clean-up pursuant to CalEPA standards was completed and no further monitoring is required.

Although no soil or groundwater contamination has been identified along the proposed pipeline route, there is the possibility that unknown contamination could exist along the route. If soil or items contaminated with hazardous materials in sufficient amounts to present a health risk are inadvertently encountered during construction, workers and the surrounding environment could be exposed to adverse health risks. In the event that contamination is encountered at a work site during installation of the pipeline, the appropriate agencies would be notified. All necessary measures to identify the nature of the contaminants present, the extent of the contamination, and the remedial technologies available to protect human health and the environment would be implemented, but are not guaranteed to mitigate all potential risk of exposure to such hazards. PG&E has committed to implementing Applicant Proposed Measure APM HAZ-1 (see above), which would reduce the potential risk of exposure to contaminated soils by testing any potentially contaminated soils and waiting until any contaminated soils have been remediated until starting construction again. Potential impacts would be less than significant (Class III).

Wildland Fires

The proposed Project is largely surrounded by agricultural fields, conservation lands, and some rural residences. The Project site would involve extensive excavation and trenching through areas with grasses that are susceptible to ignition and fire. Wildland or grassland fires can be fast burning under high wind conditions and difficult to extinguish. However, PG&E has committed to develop and implement a Fire Prevention Plan in consultation with the State Fire Marshall or other responsible fire-fighting agencies (see Applicant Proposed Measure HAZ-2, above). Implementation of an approved Fire Prevention Plan would ensure that impacts related to wildland fires during construction, maintenance, and operation would be less than significant (Class III).

Other Potential Hazards

There is one public airport (Sacramento County's Franklin Field), approximately one-half mile from the Project route on Bruceville Road, with an Airport Master Plan (AMP) that has jurisdiction over areas along the Line 108 route. The proposed Project would

not change the current land uses in the AMP, or conflict with or be inconsistent with land use restrictions in the AMP that would result in hazards to flight operations. There is one private airstrip approximately one-half mile east of the Line 108 route on Point Pleasant Road. The Line 108 Project would not result in the construction of new residences or businesses and would result in land uses consistent with current land use guidelines (i.e., underground utility easements). Therefore, no impact to the operations of public or private airports would occur.

The proposed Project would not result in a permanent modification to a road alignment, amount of traffic, or other changes to the environment that would interfere with an emergency response plan. See Section 4.7, Traffic and Transportation, for a discussion of potential impacts related to emergency response during construction of the proposed Project. No impact would occur.

Table 4.5-3 presents a summary of impacts on hazards and hazardous materials and the recommended mitigation measures.

Table 4.5-3. Summary of Impacts and Mitigation Measures for Hazards and Hazardous Materials

Impact	Mitigation Measure
HAZ-1: Risk of Serious Injuries and Fatalities Due to Project Upset	**MM HAZ-1a**. Reduce the Potential for Serious Injuries and Fatalities. **MM HAZ-1b**. Implement Operation and Maintenance (O&M) Plan.

4.5.5 Impacts of Alternatives

No Project Alternative

The No Project Alternative would not result in the near-term construction or operation of a new natural gas pipeline between the Thornton and Elk Grove Stations. The hazards and hazardous materials impacts described above that would occur under the proposed Project would not occur under the No Project Alternative.

Franklin 1 Alternative

The Franklin 1 Alternative has been analyzed in the same manner that was used to analyze the proposed Project. From a public risk standpoint, the Franklin 1 Alternative presents a slightly reduced risk, since the alternative route has a slightly different length

of line and proximity to receptors, which could affect the public in the event of a release and subsequent fire and/or explosion. The Franklin 1 Alternative would result in less pipeline immediately adjacent to or within Bilby Road and Franklin Boulevard compared to the proposed Project. The total calculated individual risk of serious injury or fatality for the Franklin 1 Alternative is 3.73×10^{-6}. This represents a 1:268,000 likelihood of the Franklin 1 Alternative causing a serious injury or fatality. This value is greater than the generally accepted significance criteria of 1:1,000,000 likelihood of a serious injury or fatality. Although this risk is slightly lower than what has been estimated for the proposed Project, impacts would continue to be significant and unavoidable (Class I). Potential impacts under the Franklin 1 Alternative associated with other hazards and hazardous materials would essentially be the same as those presented for the proposed Project (Class III).

Franklin 2 Alternative

The Franklin 2 Alternative has been analyzed in the same manner that was used to analyze the proposed Project. From a public risk standpoint, the Franklin 2 Alternative presents a slightly reduced risk, since the alternative route has a slightly different length of line and proximity to receptors, which could affect the public in the event of a release and subsequent fire and/or explosion. Similar to the Franklin 1 Alternative, the Franklin 2 Alternative would result in less pipeline immediately adjacent to or within Bilby Road and Franklin Boulevard compared to the proposed Project. The total calculated individual risk of serious injury or fatality for the Franklin 2 Alternative is 3.47×10^{-6}. This represents a 1:288,000 likelihood of the Franklin 2 Alternative causing a serious injury or fatality. This value is greater than the generally accepted significance criteria of 1:1,000,000 likelihood of a serious injury or fatality. Although this risk is slightly lower than what has been estimated for the proposed Project, impacts would continue to be significant and unavoidable (Class I). Potential impacts under the Franklin 2 Alternative associated with other hazards and hazardous materials would essentially be the same as those presented for the proposed Project (Class III).

Project without Bridge Replacement Alternative

The Project without Bridge Replacement alternative would not alter any portion of the proposed Project pipeline alignment or the construction methods. Under this alternative, the historic suspension bridge would be left in place. As a result, the public safety risk from a release and subsequent fire and/or explosion would be the same as for the proposed Project and would continue to be significant and unavoidable (Class I).

Potential impacts under the Project without Bridge Replacement alternative associated with other hazards and hazardous materials would essentially be the same as those presented for the proposed Project (Class III).

4.5.6 Cumulative Projects Impact Analysis

Section 3.4, Cumulative Related Future Projects, describes those projects that may be built in close proximity to the proposed Project. The exact timing of construction for most of these projects is unknown but could possibly coincide with the proposed Project. Coinciding construction schedules could increase the risk of certain hazards, including environmental contamination, exposure to hazardous materials, and wildland fires. However, these risks would be temporary in nature, as the proposed Project is estimated to last three to four months. Cumulative impacts related to risk of environmental contamination, exposure to hazardous materials, and wildland fires would be less than significant (Class III).

Two cumulative projects have been considered as they relate to cumulative impacts and public safety associated with risk of upset: the proposed Franklin Crossing Subdivision Project and PG&E's proposed increase in maximum operating pressure of their Line 108 from 412 psig to 490 psig. For the Franklin Crossing Subdivision, the potential fire and explosion impacts to occupants of the proposed residences were evaluated; these impacts were included in the analyses presented above for the proposed Project. The release modeling presented considered the maximum operating pressure of 490 psig, versus the current 412 psig maximum operating pressure. From a system safety and risk of upset perspective, the proposed Project would be cumulatively considerable. Cumulative impacts would be significant and unavoidable (Class I).